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A COMPARATIVE STUDY OF PROGNOSIS IN MAJOR MENTAL DISORDERS.(U)
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A Comparative Study of Prognosis in Major Mental Disorders*

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and

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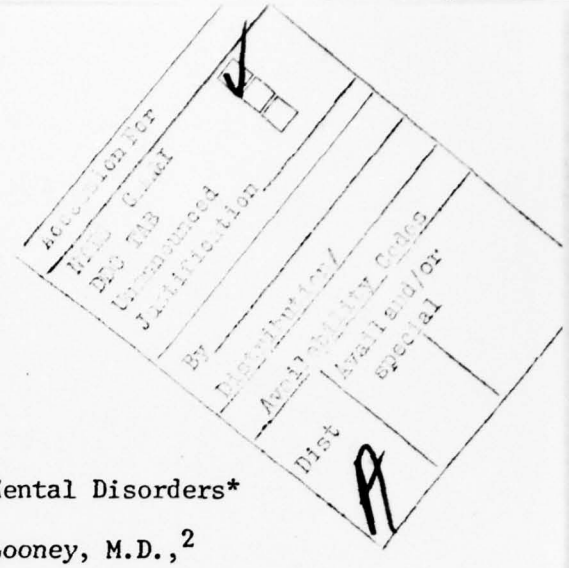
Abstract

Major diagnostic groups were compared with respect to demographic and clinical characteristics, disposition decisions, post-hospital outcomes, and prognostic indicators in a population of 19,861 male Navy psychiatric patients. The post-hospital adjustment criterion was based upon rehospitalization history and military performance record. Type of disposition from the hospital (return to active duty or not) varied widely among diagnostic categories, and rehospitalization rates also varied considerably. Psychotics (in remission) had the highest rehospitalization rate while psychophysiologic disorder cases had the lowest rehospitalization rate. Overall, consistent patterns of relationships between demographic and clinical characteristics, including diagnosis, and dispositions and post-hospital outcomes were present to an impressive degree, but the need for improved prognostic criteria was clearly demonstrated.



A Comparative Study of Prognosis in Major Mental Disorders*

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Effective treatment planning and accurate prediction of course and outcome for patients with mental disorders depend upon clearly defined diagnostic criteria and knowledge of valid prognostic indicators. Traditional psychiatric nosology has often been criticized because existing diagnostic categories generally lack specific implications with respect to etiology, prognosis, and appropriate treatment interventions. Feighner and his associates (1) have presented specific diagnostic criteria for a number of psychiatric illnesses "that have been sufficiently validated by precise clinical description, follow-up, and family studies to warrant their use in research as well as in clinical practice" (p. 57). However, except for primary affective disorders, the diagnostic criteria proposed by Feighner and his coworkers offer little information with respect to prognosis or expected outcomes. Furthermore, a recent comprehensive review of epidemiology, etiology, clinical features, diagnosis, and treatment in all of the major mental disorders provides little guidance with respect to natural history and outcome for most of these conditions (2).

An immediate impetus for developing more explicit and accurate prognostic evaluation criteria is the advent, under Public Law 92-603, of Professional Standards Review Organizations which are designed "to review hospital treatment in order to insure quality of care and need for hospital services. In order to do so, criteria for treatment (by diagnosis) must be established" (3, p. 5). The Model Criteria Sets published by the American Psychiatric Association presently do not refer to expected outcome (prognosis) for various psychiatric conditions and types of treatment, but such considerations would appear crucial for evaluating quality of mental health care against normative standards in the future.

Clinical experience indicates that course and outcome differ for major patient categories. A diagnosis of schizophrenia usually implies lengthy hospitalization, prolonged disability, and a poor prognosis for full recovery of psychological functions (4). At the other extreme, a diagnosis of Transient Situational Disturbance (Acute Situational Maladjustment) implies brief therapeutic intervention, if any, and rapid and complete recovery (5). Systematic studies of course and outcome are rare in the mental disorders except for schizophrenia and the affective psychoses. Furthermore, large-scale comparative studies of outcome involving all major diagnostic categories are nonexistent. This type of investigation can best be accomplished where the entire population at risk is available for study and where the same criteria for evaluating outcomes can be applied to all types of disorders. Such conditions exist only where there is a universal health care system for a large population, such as in the U.S. Navy.

This report integrates findings from a series of separate studies of prognostic indicators in major diagnostic categories and subcategories (5-9). In these separate studies a good deal of consistency was noted between patient characteristics and treatment outcomes. It is the purpose of this study to compare major diagnostic groups with respect to demographic and clinical characteristics, disposition decisions, and post-hospital outcomes. Similarities and differences in prognostic indicators for these groups also will be evaluated.

MENTAL ILLNESS IN THE U.S. NAVY

The incidence of new admissions for mental disorders among male enlisted personnel in the U.S. Navy remained constant at approximately 1,000 per 100,000 strength per year (1 percent per annum) from 1960 through 1970. The distribution by major diagnostic categories also remained stable. During 1960-1962 the distribution was: psychosis, 10 percent; neurosis (including psychophysiological disorders), 21 percent; personality disorder, 63 percent; and acute situational maladjustment (including combat fatigue), 6 percent. The distribution was virtually the same during 1966-1969 except for a slight decline in the percentage of personality disorder cases and a slight increase in the combat fatigue category during the Vietnam conflict (10).

Distributions of psychiatric inpatients by diagnostic categories are different in Navy and civilian settings partly because many ships and naval stations are remote from psychiatric outpatient facilities so that non-psychotic patients are more frequently hospitalized than in the civilian community. Otherwise, clinical practices with respect to diagnosis and treat-

ment probably are similar in naval hospitals and large civilian hospitals offering short-term care. The Navy has no facilities for long-term care -- this responsibility is assumed by the Veterans Administration. Course and outcome for psychoses and neuroses would not be expected to differ greatly for young males in military and civilian settings, although definitive information on these matters is not available. Because of the ready availability of health care to all members without cost to the individual, a higher proportion of young males of low socioeconomic status is likely to receive treatment in military settings than in civilian communities.

METHOD

Subjects were 19,861 Navy enlisted men discharged from naval medical facilities with diagnoses of mental disorder during calendar years 1966 through 1969. Diagnoses were established in accordance with the Department of Defense Disease and Injury Codes, July 1963. Diagnostic criteria for most conditions were essentially the same as those in the current Eighth Revision International Classification of Diseases Adapted for Use in the United States, January 1970, and those in the American Psychiatric Association Diagnostic and Statistical Manual: Mental Disorders (DSM-I) of 1952 and the Diagnostic and Statistical Manual of Mental Disorders (DSM-II) of 1968 (11).

All diagnostic categories except alcoholism (Acute Alcoholism, Chronic Alcoholism, Unspecified Alcoholism, and Alcoholic Psychosis) were included in the study. Alcoholics were excluded because course and outcome for alcoholism has been investigated in a separate series of studies (12-14).

Final diagnoses assigned at the time of hospital discharge were used as

the basis for patient classification rather than admission diagnoses because admission diagnoses are tentative and often change during the course of hospitalization (15). Also, the discharge diagnosis generally represents a concensus of clinical opinion (psychiatrist, psychologist, social worker, nurse, and corpsman) and is subject to critical review by supervisory staff and/or the chief of service in large naval hospitals.

For cases with more than one admission during the period of study, data from the first admission were utilized and for cases in which transfers from one hospital to another occurred, data recorded at the last hospital were used. Outcome studies could be conducted only on patients returned to duty and a major phase of the study involved 9,663 patients returned to duty after hospitalization during 1966-1969.

Data Sources

Individual records for all psychiatric hospitalizations in the naval service are received at the bureau of Medicine and Surgery Data Services Center, Bethesda, Maryland. These records are forwarded to the Naval Health Research Center, San Diego, California, where they are extensively edited and maintained in computer files for epidemiological and clinical research.

The records include the following information: age, years of service, pay grade (rank), occupational specialty, sex, race, marital status, duty assignment, admitting facility, hospital transfers, existence of the condition prior to entry into the service, length of hospitalization, primary and secondary diagnoses, and disposition from the hospital.

Criterion data pertaining to successful adjustment after return to duty

were obtained from two sources: Bureau of Medicine and Surgery files provided rehospitalization data and Bureau of Naval Personnel computer tapes provided information concerning date and type of discharge from the service and recommendation for reenlistment. The outcome criteria will be described in detail in a later section. The average length of follow-up for the entire sample was approximately 4 years.

Procedure

The first phase of the analysis was concerned with differences among major diagnostic groups on demographic and clinical variables and differences among subtypes within major categories. Then patients in major diagnostic categories and subcategories were divided into two groups in terms of disposition from the hospital: Returned to Duty (RTD) and Not Returned to Duty (NRTD). The latter group was released from service through administrative or medical channels. Comparisons were made between RTD and NRTD groups on demographic and clinical variables for each major diagnostic group.

Another phase of the analysis was concerned with comparison of major diagnostic groups on outcome variables and significant prognostic indicators.

DIFFERENCES AMONG MAJOR DIAGNOSTIC GROUPS IN DEMOGRAPHIC AND CLINICAL CHARACTERISTICS

In this section each of the demographic and clinical variables to be considered will be defined, and differences among major diagnostic categories on these variables will be described. A comparison of major diagnostic groups on selected characteristics is presented in Table 1. Three variables --

length of service, pay grade, and number of diagnoses -- are not included in the Table but are discussed below.

Age. This variable consisted of age at last birthday before hospitalization. In this context age at onset means the point in time when manifestations of the illness became severe enough to require hospitalization.

Differences in age among major diagnostic categories tended to be small, probably because of the restricted age range for the Navy patient population. Personality disorder patients were younger (mean age = 22.0 years) and more homogeneous with respect to age (standard deviation = 4.7) than any other group. Neurotic patients comprised the oldest (mean age = 25.0 years) and most heterogeneous (standard deviation = 7.0) major group; acute situational maladjustment patients had about the same mean age and dispersion as neurotics. The psychotic and psychophysiologic disorder groups had similar age distributions (mean age = 23.9 years and standard deviations = 6.3 and 6.7, respectively).

Except for the personality disorders, subtypes within major diagnostic groups varied considerably in mean age. Within the psychotic group schizophrenics were relatively young (mean age = 22.8 years) while patients with affective psychoses were much older (mean age = 27.7 years). Neurotic subtypes varied in mean age almost as much as psychotic subtypes: depressive neurotics had a mean age of 26.6 while hysterical neurotics had a mean age of 22.9 years. Psychophysiologic disorder subtypes also showed a wide disparity in mean ages: gastrointestinal reaction, 25.2; musculoskeletal reaction, 25.4, and respiratory reaction, 20.9.

Age at onset is reported to be an important prognostic indicator in schizophrenia; comparative studies of the prognostic significance of age at onset in most other psychiatric conditions have not been carried out previously.

Length of Service. This variable was the number of years of service completed at the time of hospitalization. In general, longer periods of service should indicate greater stability of work and social adjustment in the military milieu. The differences among diagnostic groups on length of service and pay grade closely paralleled the differences on age; therefore, means for these variables were not shown in Table 1.

Pay Grade (Job Level). This variable is the man's pay grade (E-1 to E-9) at the time of hospitalization. The hierarchical structure of the U.S. Navy provides a clear-cut measure of occupational achievement. Attaining higher pay grades reflects successful pre-morbid occupational and social adjustment and, thus, has important prognostic implications, regardless of the type of psychiatric disorder. Severe or prolonged mental illness is incompatible with normal advancement in the Navy's occupational structure (16). When speed of advancement (pay grade achieved in relation to length of service) was compared for major diagnostic groups, the schizophrenic and musculoskeletal (psychophysiologic disorder) groups were most retarded in job level compared to other groups.

Marital Status. Categories of marital status are married, single, separated, divorced, and widowed. Marital status may have an important influence on mental health, and conversely, mental health may affect marital

status. Marital conflicts often are precipitating factors in milder forms of mental disturbance, such as acute situational maladjustment (5). Severe mental or emotional disorders, as in schizophrenia, would be expected to delay, terminate, or preclude marriage in many cases. Differences among major diagnostic groups in marital status closely paralleled differences in age, but marriage rates also varied with type of illness. Taking age differences into account, acute situational maladjustment and psychophysiologic disorder patients were more frequently married than schizophrenic, schizoid personality, and inadequate personality patients.

General Classification Test (GCT). This test is a measure of verbal aptitudes on a scale ranging from 22 to 74. Scores were obtained from Bureau of Naval Personnel files. Overall the average score for the psychiatric patient population (approximately 53) was slightly below that for the total Navy population (approximately 55). Differences among diagnostic groups on GCT scores generally were small. The highest mean score (56.2) was for the schizoid personality subtype while the lowest mean score (50.2) was for the inadequate personality subtype.

Number of Diagnoses. This variable was treated as a dichotomy: single versus multiple diagnoses. More than one diagnosis may reflect uncertainty with respect to the primary diagnosis or complexity of the clinical condition. Secondary diagnoses may be more prevalent in certain conditions and may indicate that more than one specialist is frequently involved in the diagnosis and treatment of the disorder. Diagnostic groups varied widely in terms of the number of diagnoses typically assigned to the case. Schizophrenics rarely had more than a single diagnosis while almost one-half of the psychophysio-

logic disorder patients had multiple diagnoses, particularly the musculoskeletal reaction category. Approximately 30 to 40 percent of other major diagnostic categories had multiple diagnoses as opposed to single diagnoses.

Existed Prior to Entry (EPTE). This variable reflects the judgment of the examining physician as to whether the onset of the illness or condition was prior to the individual's enlistment in the Navy. This determination may affect eligibility for compensation if the individual is released from service for medical reasons. Certain of the personality disorder subtypes are presumed to have existed prior to entry by definition, although the psychiatrists' judgments are recorded independently of this general policy. Existence of the condition prior to enlistment in conjunction with long service would indicate chronicity of illness and have negative prognostic implications. There was considerable variability in percentages of the various patient groups judged to have had the condition prior to entry. A large proportion of the total personality disorder group was classified as EPTE (78 percent) while relatively few of the acute situational maladjustment (8 percent), neurosis (11 percent), or psychophysiologic disorder cases (11 percent) were so classified. One-third of the schizophrenic patients were classified EPTE while only a small percentage of the affective psychosis patients were so designated (12 percent).

Length of Hospitalization. This variable indicates the number of days spent continuously in the hospital for the current episode of illness, including transfer from one facility to another. Length of hospitalization is presumed to be a direct indicator of severity of illness and, therefore, to have

negative prognostic implications. Longer periods of hospitalization also may involve extended periods of treatment which could have positive benefits, but the nature and duration of treatment was unknown in the present study. Length of hospitalization was extremely variable among major diagnostic categories: for psychoses the mean length was 40.6 days; personality disorders, 24.6 days; psychophysiologic disorders, 23.7 days; neuroses, 19.6 days, and acute situational maladjustment, 14.4 days. Differences among subtypes within major groups also were large: schizophrenia, 45 days versus brain syndromes and psychotic reactions (not elsewhere classified), 20 days; anxiety neuroses, 14 days versus depressive neuroses, 27 days, and respiratory psychophysiologic reaction, 13 days versus musculoskeletal reactions, 40 days.

DIFFERENCES AMONG MAJOR PSYCHIATRIC CATEGORIES IN DISPOSITION DECISIONS AND POST-HOSPITAL OUTCOMES

Differences among psychiatric groups with respect to disposition decisions and post-hospital outcomes are shown in Table 2. Disposition and outcome variables are defined in the following section and salient differences among diagnostic groups are described. The limited duty variable is not included in the Table, but results for this type of disposition are described below.

Limited Duty. This type of disposition refers to restrictions placed on a man's work assignment when he is released from the hospital; usually this means a shore assignment rather than sea duty. A limited duty assignment presumably reflects a judgment of guarded prognosis on the part of the psychiatrist. Limited duty assignments tended to be used infrequently, but such assignments were most often used for psychotic paranoid reaction (23 percent),

phobic or obsessive patients (18 percent), affective psychosis patients (16 percent), and neurotic depressives (11 percent). The numbers of personality disorder (2 percent), psychophysiologic disorder (3 percent), and acute situational maladjustment cases (6 percent) given this type of assignment were small.

Returned to Duty (RTD). This classification means that the individual was not separated from service at the end of his hospitalization, but spent at least 30 days on duty after release from the hospital. A recommendation for return to duty from the hospital is based upon a favorable prognostic evaluation, that is, a judgment that the individual will be able to adjust successfully to the military environment. Percentages RTD varied widely among major diagnostic categories as shown in Table 2: psychotics, 27 percent; personality disorders, 37 percent; neurotics, 68 percent; psychophysiologic disorders, 72 percent, and acute situational maladjustment, 90 percent.

There were wide discrepancies between diagnostic subtypes within major categories. Only 22 percent of the schizophrenics were returned to duty compared to 54 percent of the affective psychosis patients. For the neurotic group 45 percent of the phobic and obsessive patients were returned to duty compared with 74 percent of the anxiety reaction patients. For personality disorders 26 percent of the schizoid patients were returned to duty and 41 percent of the passive dependency cases; for psychophysiologic disorders 57 percent of the musculoskeletal reaction group compared to 87 percent of the respiratory reaction group.

When differences in age are considered (older, more experienced men are more likely to be returned to duty), the most favorable prognostic evaluations,

as reflected by percentages returned to duty, were for hysterical reactions (neurotic), respiratory reaction (psychophysiologic disorder), and other and unspecified pathological personality disorder (hysterical, sociopathic). The most unfavorable prognostic evaluations in terms of return to duty decisions were phobic and obsessive compulsive reactions, musculoskeletal reactions, schizophrenia, and schizoid reactions.

Rehospitalization. This variable refers to whether men returned to duty were rehospitalized with any psychiatric condition during the follow-up period. Rehospitalization is an important component of the general criterion of effectiveness and is that part of the criterion which reflects the individual's clinical status primarily rather than the quality of his military performance. Rehospitalization is the most commonly used outcome criterion in studies of mental disorders.

Differences among major diagnostic categories and subcategories in post-hospital outcomes are shown in Table 2. Psychotics were most likely to be readmitted to the hospital of any major diagnostic group (44 percent) in this study. Rehospitalization rates were about the same for schizophrenia (46 percent) and affective psychosis (45 percent); paranoid schizophrenics had the highest readmission rate of any psychotic subtype (50 percent). Overall, neurotics had the next highest readmission rate (35 percent), and the phobic/obsessive subtype had the highest readmission rate within that major group (41 percent). Of major diagnostic groups, psychophysiologic disorders had the lowest readmission rate (22 percent). The rate for respiratory reaction cases was especially low (17 percent). The readmission rates for acute situational maladjustment and personality disorder patients were about the same (27 per-

cent and 29 percent, respectively). The paranoid (53 percent) and schizoid (39 percent) subtypes had the highest readmission rates among the personality disorder subcategories.

Post-Hospital Effectiveness. The effectiveness criterion was the major indicator of outcome used in the study. Effectiveness was defined as completion of at least 6 months on active duty after hospitalization and, if separated from service after 6 months, completion of current enlistment with a favorable discharge and a positive recommendation for reenlistment. Rehospitalization or unfavorable discharge (such as Unsuitable or Bad Conduct) or a negative recommendation with respect to reenlistment were the bases for classifying individuals as ineffective.

For purposes of standardization and qualitative comparisons, categories were arbitrarily labeled and defined as follows: Poor, less than 46 percent effective; Guarded, 46-55 percent; Good, 56-65 percent, and Excellent, greater than 65 percent.

The effectiveness rates for major categories were as follows: psychophysiologic disorders, 66 percent; acute situational maladjustment, 58 percent; neuroses, 51 percent; psychoses, 48 percent, and personality disorders, 39 percent. This ordering of major diagnostic groups in terms of expected outcomes appears generally consistent with clinical experience except for the acute situational maladjustment and psychotic groups. By definition the acute situational maladjustment group would be expected to have excellent prospects for rapid and complete recovery. The unexpectedly low rate of effectiveness seen for this group may be accounted for by difficulties in

identifying underlying personality disorder pathology in substantial numbers of these cases as noted elsewhere (5). The rate of effectiveness for psychotics is perhaps higher than would be expected based upon clinical observation, but it must be remembered that only about one-quarter of the "healthiest" psychotics were returned to military service from the hospital.

Within psychophysiologic disorders, gastrointestinal reaction patients had a more favorable outcome (68 percent effective) than the musculoskeletal subtype (59 percent). Among neurotic subtypes, the anxiety and hysterical subgroups, although younger and less experienced, appeared to have more favorable rehospitalization and effectiveness rates than the depressive and phobic/obsessive groups. Similarly, in spite of large differences in age, experience, and pay grade, schizophrenic and affective psychosis groups had about the same outcomes.

Percent effective (total admissions) reflects total manpower losses as a consequence of hospitalization for various psychiatric conditions, combining the effects of disposition decisions (separate from service) and post-hospital ineffectiveness. Manpower losses were extremely high for schizophrenia -- only 10 percent of all admissions performed effective service after hospitalization -- and for most of the personality disorder categories. The highest rate of attrition was for the antisocial/dyssocial personality disorder group where only 4 percent subsequently performed effectively. Manpower losses were much less for the neuroses (35 percent of all admissions were effective) and were lowest for psychophysiologic disorders (48 effective) and acute situational maladjustment (52% effective) groups.

A number of discrete comparisons can be made from the results in Table 2 to illustrate differential clinical and outcome characteristics for major diagnostic groups. The total psychotic and psychophysiologic disorder groups had the same mean age (23.9 years) and mean GCT score (52.1), but only 29 percent of the psychotics were married compared with 39 percent of the psychophysiologic disorder patients; 27 percent of the psychotics were classified EPTE compared with 11 percent of the psychophysiologic cases; psychotics were hospitalized for 42 days, psychophysiologic patients 24 days; only 27 percent of the psychotics were returned to duty compared with 72 percent of the psychophysiologic cases; 44 percent of the psychotics were rehospitalized but only 22 percent of the psychophysiologic group, and 48 percent of the psychotics were classified effective compared with 66 percent of the psychophysiologic patients.

In contrast, there was a notable similarity in the characteristics of affective psychosis patients and neurotic depressives. The two groups had similar age distributions (psychotics = 27.7 years and neurotics = 26.6 years) and mean GCT scores (53.4 and 53.6, respectively). Fifty-two percent of the psychotic group were married compared with 48 percent of the neurotics; 13 and 12 percent were EPTE, respectively; psychotics were hospitalized 37 days, neurotics 27 days; 54 percent of the psychotics were returned to duty compared with 66 percent of the neurotics; 45 percent of the psychotics were rehospitalized and 38 percent of the neurotics, and 48 percent of the psychotic group were effective compared with 49 percent of the neurotic group. Thus, there were small but consistent differences between affective psychosis and neurotic depressive patients, indicating a similar pattern but presumably

some difference in degree of severity.

The total neurotic group and the acute situational maladjustment group were similar in age (25.0 years and 24.9 years, respectively) and GCT (53.2 and 53.6, respectively) but showed consistent differences on clinical and outcome variables: 43 percent of the neurotics were married, 49 percent of the situational group; 11 percent of the neurotics were EPTE, 8 percent of the acute situational patients; the length of hospitalization for the neurotics was 20 days, for the situational group 14 days; 68 percent of the neurotics were RTD compared with 90 percent of the situational group; 35 percent of the neurotics were rehospitalized, and 27 percent of the situational patients, and 51 percent of the neurotics were classified effective compared with 58 percent of the situational maladjustment patients.

In order to control for the age-length of service-pay grade differences among diagnostic groups, effectiveness rates by pay grade level were computed for each of the major diagnostic groups separately as shown in Table 3. Prognostic categories are labeled in terms of the 4-point scale defined earlier.

For the neurotic, psychophysiologic disorder, personality disorder, and acute situational maladjustment categories and subcategories the relationship between pay grade and effectiveness was positive and linear, that is, higher pay grades had better outcomes than lower pay grades. For the schizophrenic group the relationship was not linear -- both low and high pay grade levels had relatively favorable outcomes.

For the two largest schizophrenic subgroups (shown in Table 3), and for the total schizophrenic sample, except for senior petty officer group (E-6 or above), there was an inverse relationship between pay grade level and

effectiveness. This result indicated that early onset of schizophrenia has favorable prognostic significance in the naval service.

Among the neurotic subtypes, the anxiety and hysterical groups had more favorable outcomes overall than the depressive and phobic/obsessive groups. It is notable that senior petty officers (E-6 or above) diagnosed phobic or obsessive-compulsive had poor outcomes, suggesting that these patients responded poorly to conventional therapies compared to other neurotic senior petty officer groups.

The psychophysiologic disorder groups as a whole had more favorable outcomes at all pay grade levels than any other diagnostic category. Except for the lowest pay grade levels (E-1 and E-2), the gastrointestinal and respiratory reaction groups had better outcomes than the musculoskeletal reaction patients. This result is consistent with clinical experience which would suggest that the musculoskeletal disorders are often refractory to treatment, particularly those that follow an injury such as acute back strain or "whiplash."

Personality disorder patients in the lower pay grade levels had uniformly poor outcomes. Only the petty officer levels (E-4 or above) for the passive-dependency and other and unspecified immature personality (compulsive, immature) categories had good outcomes. All pay grade levels for the inadequate and antisocial/dyssocial groups had poor outcomes, and the latter subcategory had an extremely poor prognosis overall (only 10 percent effective).

There were too few cases to draw firm conclusions with respect to the manic depressive and other affective psychoses groups; it can only be noted

that there was a different pattern of effectiveness rates in relation to pay grade levels than was evident for other diagnostic categories.

COMPARISON OF PROGNOSTIC INDICATORS FOR MAJOR DIAGNOSTIC GROUPS

Correlations between selected demographic and clinical variables and the disposition (RTD) and post-hospital outcome (effectiveness) criteria are shown in Table 4.

Length of hospitalization (an indicator of severity) and EPTE (an indicator of chronicity) were the most important predictors of RTD dispositions; both variables correlated negatively with RTD decisions for all diagnostic groups. EPTE had low correlations for the acute situational maladjustment and schizophrenic groups; this result was not surprising for the former group because very few of these cases were classified EPTE but was unexpected for the schizophrenic group for whom chronicity should be important.

Age, length of service, and pay grade correlated positively with RTD dispositions for all diagnostic categories; being married also was generally associated with RTD decisions, but not all of these correlations were significant.

GCT scores had low negative correlations with RTD status for most diagnostic groups, indicating a trend to select individuals with lower verbal aptitudes for return to duty; the personality disorder and acute situational maladjustment groups were exceptions to this trend, however.

Race was not significantly related to RTD dispositions for any diagnostic group, and number of diagnoses (multiple) was negatively related to RTD only for the personality disorder and acute situational maladjustment groups.

To summarize, indicators of severity (length of hospitalization) and chronicity (EPTE) were important in prognostic evaluations (RTD decisions) of neurotic and psychophysiologic disorder patients; these variables were less important for the schizophrenic, personality disorder, and acute situational maladjustment groups. Pre-morbid social and occupational adjustment (pay grade and length of service) were important for all diagnostic groups except schizophrenia.

Age, length of service, pay grade, and marital status (married) were positively correlated with the post-hospital effectiveness criterion for all diagnostic groups except schizophrenia and phobic or obsessive-compulsive neuroses. EPTE was significantly correlated with effectiveness only for the psychophysiologic disorder group; EPTE was associated with ineffectiveness for this group. Length of hospitalization was positively related to effectiveness for two groups, depressive neurotic and phobic/obsessive-compulsive neurotic groups. This result suggested that longer periods of treatment were beneficial for these groups. The same trend was apparent for the schizophrenic group, and, indeed, when schizophrenics with short hospitalizations (less than 15 days, N = 142) were compared with those with longer periods of hospitalization (51 or more days, N = 284), a clear difference in effectiveness rates emerged -- 37 percent effective for short hospitalization versus 54 percent effective for longer hospitalization ($p < .01$). The implications of this finding have been discussed elsewhere (9).

The limited duty variable was significantly related to effectiveness only for the psychophysiological disorder and acute situational maladjustment groups, although a negative trend is evident for other groups as well. As

expected, this indicator of a guarded prognosis generally tended to relate negatively with effectiveness, but it was not an important predictor.

In summary, then, effectiveness was predictable from successful premorbid social and occupational adjustment (length of service, pay grade, and marital status) for all groups except schizophrenia and phobic/obsessive neuroses. EPTE, length of hospitalization, and limited duty correlated significantly with effectiveness for specific groups, but overall were of minor importance for predicting post-hospital outcomes. Selection of patients for return to duty on the basis of age, length of service, pay grade, marital status, EPTE, and length of hospitalization tended to restrict variability on these factors within the RTD sample and made prediction of post-hospital adjustment more difficult. Nevertheless, the analysis differentiated patient subgroups in terms of outcome as shown in Table 3.

DISCUSSION

Patients in the present study were not diagnosed in accordance with precisely defined criteria such as those recommended by Feighner (1). Patients were seen in diverse types of naval medical facilities ranging from small dispensaries without psychiatric services to large hospitals with many types of mental health professionals. Some variability in diagnostic and disposition practices would be expected despite standardized administrative and clinical procedures. In fact, differences in clinical practices were noted among the four largest naval hospitals studied (6). For example, mean days of hospitalization for personality disorders varied considerably among the four hospitals: 49 days, 31 days, 20 days, and 22 days. Furthermore, prediction of outcome dramatically improved when hospitals were considered

individually, suggesting that evaluation and treatment practices differed among hospitals and affected outcomes. Such differences among hospitals appear to be an important area for future research.

In spite of this variability among hospitals, consistent patterns of relationships between demographic and clinical characteristics, including diagnosis, and dispositions and post-hospital outcomes were apparent in the present study and indicated the existence of common criteria for diagnostic classification and prognostic evaluation to an impressive degree.

At the same time, the fact that more than one-half of all patients returned to duty from the hospital were rehospitalized or exhibited unsatisfactory work performance indicates that criteria for disposition decisions (prognostic evaluations) need to be improved. Such decisions should be based upon a combination of presenting symptoms, clinical history, and current life situation variables which have relevance and validity for predicting outcome. A number of indicators in the present study correlated with disposition and post-hospital outcome and confirmed the prognostic significance of these variables as reported in previous studies (17,18,19). Major diagnostic groups could be differentiated with respect to return to duty and effectiveness on the basis of indicators of pre-morbid social and occupational adjustment and severity and chronicity of illness. It is important that norms for these basic demographic and clinical variables, as well as correlations with disposition and post-hospital effectiveness, be determined so that the effects of other characteristics of patients and hospitals (treatments) on outcome can be evaluated. More extensive and precise descriptions of patients, illness syndromes, and types of treatment, and evaluation of their relevance for

outcomes, will be needed to achieve accurate prognostic evaluations that have clinical value.

Classification of mental disorders has been unsatisfactory largely because of the complexity of causal factors and uncertainty with respect to etiology, overlapping of clinical syndromes, lack of systematic outcome studies, and changing cultural attitudes toward deviant behavior. Comparative studies, delineating similarities and differences among major diagnostic groups and leading to more refined concepts and diagnostic criteria, are essential to the development of more meaningful and effective taxonomies.

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Footnotes

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Table 1

Comparison of Major Diagnostic Groups on Demographic and Clinical Characteristics

Diagnoses	Number of Cases	No. RTD[a]	Mean Age	Mean GCT	Percent Married	Percent EPTE[b]	Mean No. Hospital Days
Psychoses	2304	616	23.9	52.1	29	27	40.6
Schizophrenia	1981	427	22.8	51.9	22	33	45.4
Affective psychosis (includes Involution)	123	73	27.3	54.0	53	12	34.6
Paranoid reaction	84	39	28.4	52.2	58	16	40.1
Brain syndrome	44	27	22.8	53.3	18	18	23.2
Other and unspecified psychoses	69	48	23.9	51.2	33	11	19.0
Neuroses	4074	2767	25.0	53.2	43	11	19.6
Anxiety	1796	1328	24.0	53.0	39	9	13.6
Hysterical (Dissoc./Conversion)	333	222	22.9	51.1	35	9	20.8
Phobic/Obsessive/Other	317	142	25.5	54.1	46	28	19.9
Depressive	1628	1075	26.6	53.6	48	12	26.6
Psychophysiological Disorders	879	633	23.9	52.1	39	11	23.7
Gastrointestinal	316	232	25.2	52.9	48	14	23.8
Respiratory	179	156	20.9	50.8	20	7	13.5
Musculoskeletal	189	108	25.4	51.4	48	13	40.3
Other systems	195	137	21.6	52.8	41	9	21.9
Personality Disorders	10526	3913	22.0	53.3	28	78	24.6
Schizoid	1532	392	21.5	56.2	18	81	29.2
Inadequate	437	135	21.6	50.2	16	72	21.7
Other pathological personality	668	304	22.4	52.0	26	75	19.0
Emotional instability	2681	940	21.1	52.7	27	80	23.9
Passive dependency	3663	1506	22.8	53.5	33	81	26.8
Other immature personality	1408	603	21.2	53.6	27	73	20.3
Acute situational maladjustment	2078	1874	24.9	53.6	49	8	14.4

[a]Number of cases returned to duty after hospitalization.

[b]Existed prior to entry into service.

Table 2

Disposition Decisions and Post-Hospital Outcomes by Major Diagnostic Categories and Subcategories

Diagnosis	Number of Cases	No. RTD	Percent RTD	Percent Rehospitalized	Percent Effective (RTD)[a]	Percent Effective (Total Admissions)[b]
Psychoses	2304	616	27	44	48	13
Schizophrenia	1981	427	22	46	48	10
Paranoid schizophrenia	732	156	21	50	46	10
Acute undifferentiated schizophrenia	541	114	21	44	47	10
Other and unspecified schizophrenia (chronic)	427	104	24	43	50	12
Affective psychosis (includes Involutional)	123	73	59	47	45	27
Manic depressive	56	36	64	42	47	30
Other affective psychoses NEC	62	33	53	48	45	24
Paranoid reaction	84	39	46	41	54	25
Brain syndrome	44	27	61	30	59	36
Other and unspecified psychoses	69	48	70	38	42	29
Neuroses	4074	2767	68	35	51	35
Anxiety	1796	1328	74	32	52	38
Hysterical	333	222	67	31	53	35
Phobic/Obsessive/Other	317	142	45	41	49	22
Depressive	1628	1075	66	38	49	32
Psychophysiological Disorders	879	633	72	22	66	48
Gastrointestinal	316	232	73	25	68	50
Respiratory	179	156	87	17	63	55
Musculoskeletal	189	108	57	31	59	34
Other systems	195	137	70	18	71	50

[a]Percent effective (RTD) is based upon the number of cases returned to duty. Criteria for being classified effective included completion of six months on active duty, no rehospitalization, and favorable discharge from service and recommendation for reenlistment if separated.

[b]Percent effective (total admissions) is based upon the total number of individuals admitted with the condition. This index is the product of percent RTD and percent effective (RTD) and reflects the percentage of all admitted cases that

Diagnosis	Number of Cases	No. RTD	Percent RTD	Percent Rehospitalized	Percent Effective (RTD)	Percent Effective (Total Admissions)
Personality Disorders	10526	3913	37	29	39	14
Schizoid	1532	392	26	39	36	9
Inadequate	437	135	31	33	41	13
Paranoid	143	53	37	53	28	10
Antisocial/Dysocial	138	60	43	28	10	4
Sexual deviation	117	50	43	14	34	14
Other and unspecified pathological disorders (Hysterical, sociopathic)	247	133	54	25	30	16
Emotional instability	2681	940	35	30	36	13
Passive dependency	3663	1506	41	25	44	18
Aggressive	87	44	51	25	36	18
Enuresis and other habits	127	20	16	30	45	7
Other and Unspecified immature (compulsive, immature)	1284	539	42	27	41	17
Acute situational maladjustment	2078	1874	90	27	58	52

Table 3

Effectiveness Rates by Diagnostic Subtype and Pay Grade

Diagnostic Subtype	Pay Grade	Number of Cases	Percent Effective	Prognosis[a]
Paranoid schizophrenia	E-1,E-2	44	64	Good
	E-3	46	37	Poor
	E-4,E-5	43	33	Poor
	E-6 or above	23	57	Good
Acute undifferentiated schizophrenia	E-1,E-2	43	56	Good
	E-3	37	49	Guarded
	E-4,E-5	29	34	Poor
	E-6 or above	5	40	Poor
Total schizophrenia	E-1,E-2	152	53	Guarded
	E-3	134	44	Poor
	E-4,E-5	100	39	Poor
	E-6 or above	40	60	Good
Manic depressive and other affective psychoses NEC	E-1,E-2	11	27	Poor
	E-3	14	64	Good
	E-4,E-5	26	42	Poor
	E-6 or above	18	50	Guarded
Anxiety	E-1,E-2	353	42	Poor
	E-3	353	49	Guarded
	E-4,E-5	392	59	Good
	E-6 or above	223	60	Good
Hysterical (conversion, dissociative)	E-1,E-2	63	35	Poor
	E-3	83	57	Good
	E-4,E-5	53	58	Good
	E-6 or above	22	77	Excellent
Depression	E-1,E-2	163	33	Poor
	E-3	257	41	Poor
	E-4,E-5	341	52	Guarded
	E-6 or above	310	62	Good
Phobic/Obsessive[b]	E-1,E-2	22	45	Poor
	E-3	39	49	Guarded
	E-4,E-5	44	57	Good
	E-6 or above	37	43	Poor

[a]Prognostic categories are provisionally defined for purposes of exposition and comparison as follows: Poor, less than 46% effective; Guarded, 46-55%; Good, 56-65%, and Excellent, greater than 65%.

[b]Predominantly phobic and obsessive compulsive types but includes hypochondriacal reaction, depersonalization reaction, occupational neurosis, and neurotic reactions of other and unspecified types.

Diagnostic Subtype	Pay Grade	Number of Cases	Percent Effective	Prognosis
Total neuroses	E-1,E-2	601	39	Poor
	E-3	732	47	Guarded
	E-4,E-5	830	56	Good
	E-6 or above	592	60	Good
Gastrointestinal	E-1, E-2	52	40	Poor
	E-3	65	68	Excellent
	E-4 or above	82	82	Excellent
Musculoskeletal	E-1,E-2	28	57	Good
	E-3	29	52	Guarded
	E-4 or above	51	65	Good
Respiratory	E-1,E-2	99	57	Good
	E-3	29	62	Good
	E-4 or above	27	85	Excellent
Total psychophysiologic disorders	E-1,E-2	217	52	Guarded
	E-3	157	65	Good
	E-4,E-5	154	75	Excellent
	E-6 or above	102	82	Excellent
Schizoid	E-1,E-2	145	22	Poor
	E-3	150	41	Poor
	E-4 or above	97	48	Guarded
Inadequate	E-1,E-2	57	39	Poor
	E-3	55	44	Poor
	E-4 or above	23	39	Poor
Antisocial/Dysocial	E-1,E-2	33	9	Poor
	E-3	18	11	Poor
	E-4 or above	9	11	Poor
Other and unspecified pathological personality (hysterical, sociopath)	E-1,E-2	56	21	Poor
	E-3	46	30	Poor
	E-4 or above	31	45	Poor
Emotional instability	E-1,E-2	369	35	Poor
	E-3	352	38	Poor
	E-4 or above	216	51	Guarded
Passive-dependency	E-1,E-2	490	31	Poor
	E-3	510	42	Poor
	E-4 or above	503	58	Good

Diagnostic Subtype	Pay Grade	Number of Cases	Percent Effective	Prognosis
Other and unspecified immature personality (compulsive, immature)	E-1,E-2	231	33	Poor
	E-3	184	42	Poor
	E-4 or above	122	56	Good
Total personality disorders	E-1,E-2	1433	28	Poor
	E-3	1390	40	Poor
	E-4,E-5	838	51	Guarded
	E-6 or above	243	63	Good
Acute situational maladjustment	E-1,E-2	286	43	Poor
	E-3	491	55	Guarded
	E-4,E-5	678	62	Good
	E-6 or above	416	66	Excellent

Table 4

Correlations of Selected Predictor Variables with Return to Duty and Effectiveness Criteria by Major Diagnostic Group[a]

Demographic and Military Status Variables	Psychosis		Neurosis														Acute Sit. Mal.	
	Schiz.		Anxiety		Hysterical		Depressive		Phob/Obs.		Physiol. Disorder		Person. Disorder					
	RTD	Eff	RTD	Eff	RTD	Eff	RTD	Eff	RTD	Eff	RTD	Eff	RTD	Eff			RTD	Eff
Age	11**	03	12**	10**	14**	14*	16**	13**	34**	01	15**	16**	19**	14**			18**	13*
Length of service	13**	01	15**	09**	16**	12	20**	14**	36**	-03	15**	15**	22**	14**			20**	12**
Pay grade	10**	-05	18**	13**	21**	23**	23**	20**	36**	02	12**	23**	19**	21**			26**	15**
Marital status (married)	07**	03	08**	10**	06	13*	11**	11**	09	03	07*	11**	07*	11**			14**	08**
GCT	-05*	12*	-03	06*	-05	13*	-06*	07*	-12*	-03	-08*	15**	00	08**			05**	07**
Clinical Variables																		
EPTE	-05*	-03	-20**	-04	-31**	-03	-20**	-03	-32**	00	-36**	-12**	-11**	00			-06**	-02
Hospital days	-23**	06	-34**	-03	-41**	01	-31**	06*	-35**	18*	-28**	-07	-16**	03			06**	02
Limited duty	-	-06	-	-05	-	01	-	-04	-	-09	-	-08*	-	-01			-	-08**
Number of cases	1981	427	1796	1328	333	222	1628	1075	317	142	879	633	10526	3913			2078	1874

*p < .05

**p < .01

[a]Decimals are omitted.

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Major diagnostic groups were compared with respect to demographic and clinical characteristics, disposition decisions, post-hospital outcomes, and prognostic indicators in a population of 19,861 male Navy psychiatric patients. The post-hospital adjustment criterion was based upon rehospitalization history and military performance record. Type of disposition from the hospital (return to active duty or not) varied widely among diagnostic categories, and rehospitalization rates also varied considerably. Psychotics

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(in remission) had the highest rehospitalization rate while psychophysiologic disorder cases had the lowest rehospitalization rate. Overall, consistent patterns of relationships between demographic and clinical characteristics, including diagnosis, and dispositions and post-hospital outcomes were present to an impressive degree, but the need for improved prognostic criteria was clearly demonstrated.